

JUXTAPOSITION OF PINES AND POULTRY: A POTENTIAL PROBLEM FOR BOTH

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INTRODUCTION

Pitch canker, a sometimes serious fungal disease of *Pinus* spp., caused by *Fusarium subglutinans* (Wollenw. & Reinking) Nelson, *et al.* [f. sp. *pini* Correll *et al.* = *F. circinatum* Nirenburg and O'Donnell sp. nov. (Nirenburg and O'Donnell 1998)?] is strongly influenced by the physiological (esp. nutritional) status of its host pines. Severe outbreaks of the disease can result in significant stem and crown damage as well as mortality of infected trees. For years, if not decades, casual observations and research in Florida have noted elevated levels of both incidence and severity of pitch canker in susceptible pines subjected to high and/or imbalanced levels of fertility (Anderson and Bakeslee 1984, Claeson and Smith 1977, Fisher, Garbett and Underhill 1981, Meyers 1989). Above “normal” levels of damage caused by this disease have been observed in 1) fertilized pine plantations, 2) pines in high maintenance landscapes (golf courses, etc.), 3) pines used experimentally as a nutrient filter to extract nutrients from industrial wastewater for purposes of aquifer protection, 4) pines surrounding a commercial sod farm irrigated with nutrient-rich brewery wastewater, and 5) pines adjacent to a chemical plant emitting aerosol ammonia.

In 1977, Claeson and Smith reported a strong relationship between nutrient gradients and the incidence of pitch canker in slash pine (*Pinus elliotii* Englem.) along radii from a poultry farm in Baker County, Florida. Recent field assessments of similarly affected stands in Suwannee County, Florida have shown similar spatial relationships. Repeated episodes of damaged pines proximal to poultry farms in Florida, increasing acreages of susceptible pines, and recent changes in poultry production practices are combining to signal an important and potentially expanding problem for both pine growers and poultry producers (Figures A-H).

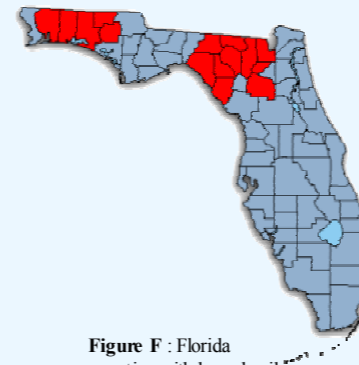


Figure F: Florida counties with large broiler chicken production facilities indicated in red.



Figure G: Poultry production complexes adjacent to pine plantations: a growing problem for both tree growers and poultry producers.

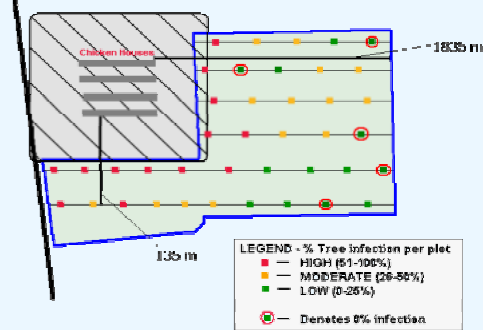


Figure H: Preliminary plot work in a 14-year-old slash pine plantation. Note higher incidence of pitch canker in plots closest to poultry houses.

DEVELOPING STUDY

With support from The U.S.D.A. Forest Service's Forest Health Monitoring Program (Region 8), we are initiating an assessment of the spatial relationship between aerosol nutrient emissions (esp. N) from poultry production houses and pitch canker-related damage and mortality in adjacent slash pine plantations.

OBJECTIVES INCLUDE:

- ♦ Quantification of periodic aerosol N emissions from a tunnel-ventilated poultry house (Figure I).
- ♦ Spatial assessment of N (and other nutrient) accumulation in soils and pine foliage in developing slash pine plantations adjacent to poultry production facilities.
- ♦ Assessment of associated pitch canker-related impact (damage and mortality) in affected slash pine plantations.
- ♦ Development of effective guidelines for “safe” distances between poultry houses and planted pines.

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Figure A: Severe impact of pitch canker (and other?) disease on slash pines proximal to a tunnel ventilated poultry production facility.



Figure B: Extreme acropetal crown thinning in 14-year-old slash pine associated with nearby poultry production facility.



Figure C: Stand thinning and dead trees associated with poultry production facilities; poultry house in background.



Figures D and E: Dead and dying slash pines in plantations proximal to large tunnel ventilated poultry production facilities in northern Florida.



Figure I: Large cooling fans, part of modern “tunnel ventilation” systems in poultry houses; a part of the problem?